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Rice Research Verification Program

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INTRODUCTION

In 1983, the Cooperative Extension Service established an interdisciplinary rice educational program that stresses management intensity and integrated pest management to maximize returns. The purpose of the Rice Research Verification Program (RRVP) was to verify the profitability of University of Arkansas recommendations in fields with less than optimum yields or returns.

The goals of the RRVP are to: 1) educate producers on the benefits of utilizing University of Arkansas recommendations to improve yields and/or net returns, 2) to conduct on-farm field trials to verify research based recommendations, 3) to aid researchers in identifying areas of production that require further study, 4) to improve or refine existing recommendations which contribute to more profitable production, 5) to incorporate data from RRVP into Extension educational programs at the county and state level. Since 1983, the RRVP has been conducted on 297 commercial rice fields in 33 rice-producing counties in Arkansas. The program has typically averaged about 20 bushels/acre better than the state average. This increase in yield over the state average can mainly be attributed to intensive cultural management and integrated pest management.

Rice was grown on 1.393 million acres in Arkansas in 2008. The distribution of varieties was: Wells (25%), Francis (14%), RT CL XL 729 (15%), RT CL XL 730 (9%), CL 171 (14%), CL 161 (5%), others (20%). A wet spring and flooding resulted in a late planted crop. As of 6 May, farmers had planted about 50% of the rice acreage, compared to the five year average of over 80%. All of the verification fields were planted prior to 23 May, which was about a month later than 2007. The state experienced hot weather in July. The temperature dropped in August and September, slowing growth and development. Cool nighttime temperatures during the flowering period for much of the rice should have resulted in excellent yields and quality; however, Hurricanes Gustav and Ike caused major damage. Damage from the hurricanes included shattering, lodging and delayed harvest and had a great economic impact. Fertilizer and fuel prices were at record highs in 2008; however, the higher rice prices helped make all the 2008 verification fields profitable.

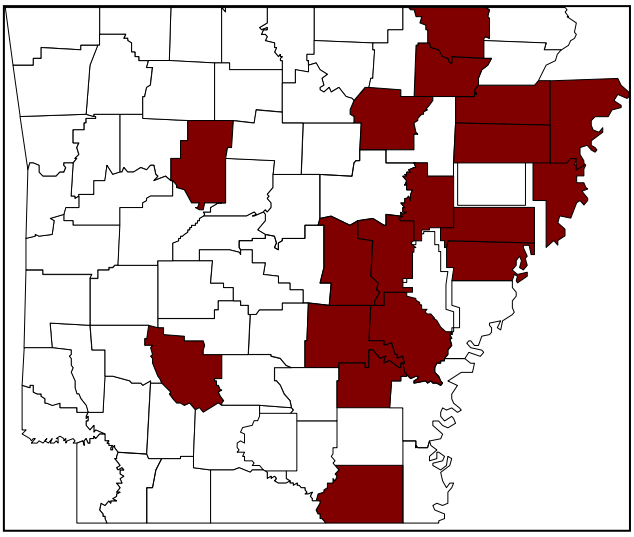
PROCEDURES

The RRVP fields and cooperators are selected prior to the beginning of the growing season. Cooperators agree to pay production expenses, provide expense data, and implement university recommendations in a timely manner from planting to harvest. A designated county agent from each county assists the RRVP coordinator in collecting data, scouting the field, and maintaining regular contact with the producer. Weekly visits by the coordinator and county agents were made to monitor the growth and development of the crop, determine what cultural practices needed to be implemented and to monitor type and level of weed, disease and insect infestation for possible pesticide applications.

An advisory committee consisting of Extension specialists and university researchers with rice responsibility assists in decision-making, development of recommendations and program direction. Field inspections by committee members were utilized to assist in fine-tuning recommendations.

Counties participating in the program during 2008 included Arkansas (2 fields), Ashley, Clark, Clay, Craighead, Crittenden, Drew, Jefferson, Lawrence, Lee, Lincoln, Lonoke (2 fields), Mississippi, Poinsett, Pope, Prairie (2 fields), Randolph, St. Francis, and Woodruff (Figure 1). A total of 1496 acres were enrolled in the program. Eight varieties were seeded ('Francis", 'Wells', 'CL XL 729', 'CL XL 730', 'XL 723', "Cocodrie", 'Cybonnet', and 'CL 171') in the 22 fields. University of Arkansas recommendations were used to manage the RRVP fields. Agronomic and pest management decisions were based on field history, soil test results, variety, and data collected from individual fields during the growing season. An integrated pest management philosophy is utilized based on University of Arkansas recommendations. Data collected included components such as stand density, weed populations, disease infestation levels, insect populations, plant dry matter accumulation, temperature, rainfall, irrigation amounts, dates for specific growth stages, grain yield, milling yield, and grain quality.

Figure 1. Location of the 2008 RRVP fields



RESULTS

Yield

The average RRVP yield was 171 bu/acre with a range of 135 to 218 bu/acre (Table 1). The RRVP average yield was 21 bu/acre more than the estimated state average yield of 150 bu/acre. This difference has been observed many times since the program began, and can be attributed in part to intensive management practices and utilization of University of Arkansas recommendations. The 2008 RRVP average was 18 bu/acre less than the program's highest average yield of 189 bu/acre set in 2007. The highest yielding field yielded 218 bu/acre. The field was seeded with Wells in Craighead County. One additional field, Drew County, exceeded 200 bu/acre. Five fields exceeded 190 bu/acre. The lowest yielding field yielded 135 bu/acre and was seeded with Wells in Mississippi County.

Milling data was also recorded on all of the RRVP fields. The average milling yield for the 22 fields was 57/69 (head rice / total white rice) with the highest milling yield of 64/71 occurring in Prairie 1 County (Table 1). The milling yield of 55/70 is considered the standard used by the rice milling industry. The lowest milling yield was 47/66 and occurred in both the Crittenden and St. Francis County fields of Wells.

Table 1. Variety, soil series, previous crop, acreage, yield, and milling for the 2008 RRVP

County	Variety	Soil series	Previous crop	Acres	Yield	Milling yield[z]	Harvest moisture
					(bu/acre)		(%)
Arkansas 1	Francis	Stuttgart Silt Loam	Soybean	78	193	59/68	18.7
Arkansas 2	CL 171	DeWitt Silt Loam	Soybean	139	140	60/68	20.8
Ashley	Cocodrie	Perry Clay	Soybean	50	140	53/61	17.5
Clark	CL 171	Gurdon Silt Loam	Soybean	59	142	55/69	19.6
Clay	Francis	Foley Silt Loam	Corn	120	191	60/68	16.5
Craighead	Wells	Roellen Clay Loam	Fallow	12	218	61/70	20.5
Crittenden	Wells	Dundee Silt Loam	Fallow	88	138	47/66	18
Drew	CL XL 729	Portland Clay	Soybean	42	215	50/66	19.8
Jefferson	CL XL 730	Perry Clay	Rice	59	183	52/69	18
Lawrence	CL XL 729	Calloway Silt Loam	Rice	25	165	52/66	20
Lee	Francis	Loring Silt Loam	Soybean	135	164	63/71	19
Lincoln	CL XL 729	Perry Clay	Soybean	138	177	63/71	19.6
Lonoke 1	CL XL 730	Calloway Silt Loam	Soybean	34	189	61/71	17
Lonoke 2	Francis	Herbert Silt Loam	Rice	20	190	61/70	17
Mississippi	Wells	Sharkey Silty Clay	Soybean	36	135	53/67	20.8
Poinsett	CL XL 729	Sharkey Clay	Soybean	77	155	53/69	21.4
Pope	XL 723	Roellen Clay	Rice	40	198	51/70	17.5
Prairie 1	Cybonnet	Calloway Silt Loam	Soybean	54	163	64/71	17.6
Prairie 2	Cocodrie	Calhoun Silt Loam	Soybean	86	185	63/70	17
Randolph	XP723	Dundee Silt Loam	Soybean	146	189	60/71	15
St. Francis	Wells	Dundee Silt Loam	Rice	28	164	47/66	20
Woodruff	CL XL 729	Grubbs Silt Loam	Soybean	30	190	55/69	21
Average				68	171	57/69	18.7

[z]Head rice/total white rice

Planting and Emergence

Planting began with Lee County on 27 March and ended with Mississippi County planted 22 May (Table 2). The majority of the verification fields were planted in mid to late April. An average of 80 lbs/acre was seeded in the RRVP fields (Table 2). Seeding rates were determined with the Cooperative Extension Service RICESEED program for all fields. An average of 11 days was required for emergence. Stand density ranged from 5 to 35 plants/ft^2, with an average of 20 plants/ft^2. The seeding rates in several fields were higher than average due to planting method and soil texture. Broadcast seeding and clay soils require elevated seeding rates.

Irrigation

Well water was used to irrigate 18 of the 22 fields in the 2008 RRVP. Arkansas (1), Lonoke (2), Pope, and Prairie (2) Counties were irrigated with surface water. Six fields were leveled to zero grade (Craighead, Jefferson, Lawrence, Lonoke (2), Pope, and St. Francis). Ten fields (Arkansas (1), Arkansas (2), Ashley, Clark, Clay, Lee, Lincoln, Lonoke (1), Prairie (2), and Randolph Counties) used multiple inlet (MI) irrigation either by utilizing irrigation tubing or by having multiple risers or water sources. The Clay, Lee, and Randolph County fields had 2 wells and 3 risers each. The Lincoln County field had one well with 2 risers. Flow meters were used in 10 of the fields to record water usage throughout the growing season. In fields where flow meters were not utilized, an average of 25 acre-inches was used.

An average of 25 acre-inches of water was used across all irrigation methods (Table 2). The zero grade fields used the least amount of water for irrigation averaging 22 acre-inches. The field with MI irrigation averaged 25 acre-inches of water; however, many of those fields did not have flow meters and the average was used. Difference in water used was due in part by rainfall amounts which ranged from 4 to 28 inches. Typically a 25% reduction in water used is seen when using MI irrigation.

Table 2. Stand density, irrigation, seeding rate, and important dates in the 2008 RRVP season

County	Stand density (plants/ft^2)	Rainfall (inches)	Irrigation[z] (acre-in.)	Rainfall + Irrigation (inches)	Seeding rate (lb/acre)	Planting date	Emergence date	Harvest date
Arkansas 1	28	12	25	37	80	15-Apr	26-Apr	8-Sep
Arkansas 2	34	12	25	37	90	5-May	19-May	18-Sep
Ashley	22	14	25	39	105	25-Apr	5-May	9-Sep
Clark	22	22	25	47	70	6-May	22-May	9-Sep
Clay	22	10	25	35	85	30-Apr	11-May	23-Sep
Craighead	28	11	24	35	150	7-Apr	20-Apr	1-Sep
Crittenden	35	12	25	37	120	17-Apr	27-Apr	17-Sep
Drew	24	18	25	43	53	13-Apr	23-Apr	5-Sep
Jefferson	8	4	22	26	30	24-Apr	9-May	5-Sep
Lawrence	5	12	22	34	30	12-May	22-May	4-Oct
Lee	26	21	25	46	120	27-Mar	10-Apr	11-Sep
Lincoln	20	9	19	28	60	22-Apr	3-May	8-Sep
Lonoke 1	12	22	29	51	30	29-Apr	9-May	19-Sep
Lonoke 2	26	19	21	40	100	21-Apr	2-May	12-Sep
Mississippi	28	10	25	35	115	22-May	27-May	26-Sep
Poinsett	7	10	16	26	28	18-May	24-May	24-Sep
Pope	7	28	10	38	58	20-May	25-May	8-Oct
Prairie 1	23	12	30	42	90	14-Apr	24-Apr	30-Aug
Prairie 2	26	8	25	33	90	23-Apr	4-May	16-Sep
Randolph	7	14	31	45	38	13-May	18-May	1-Oct
St. Francis	23	10	34	44	180	6-May	15-May	23-Sep
Woodruff	7	11	35	46	28	14-Apr	28-Apr	31-Aug
Average	20	14	25	37	80			

[z]An average of 25 acre-inches is used for fields not utilizing flow meters

Fertilization

Nitrogen recommendations were based on a combination of factors including soil texture, previous crop and variety requirements (Table 3). Nitrogen rates can appear high in some fields where rice was the previous crop and the soil texture is a clay soil type. These factors increase the nitrogen requirements significantly compared to a silt loam soil where soybeans were the previous crop.

Ammonium sulfate (21-0-24) was applied in some fields at 2-3 leaf stage as a management tool to speed development and shorten the time required to get the rice to flood stage (Table 3). Ammonium sulfate was applied at a rate of 100 lbs/acre in Arkansas (1), Clark, Jefferson and Prairie (2) Counties and at a rate of 50 lbs/acre in Lincoln, Lonoke (2) and Woodruff Counties. Ammonium sulfate was blended with the pre-flood urea in Crittenden and Pope Counties.

Phosphorus, potassium, and zinc were applied based on soil test results (Table 3). Phosphorus and/or potassium and zinc were applied pre-plant in most of the fields. Phosphorus was applied to Jefferson, Lincoln, Lonoke (2), Pope, St. Francis, and Woodruff Counties in the form of diammonium phosphate (DAP; 18-46-0). The DAP was blended with pre-flood urea in Pope County and applied during the 2 to 3 leaf stage in the other counties listed. Zinc was applied as a seed treatment in fields with hybrid rice varieties at a rate of one-half pound of zinc per 60 pounds of seed. The average cost of fertilizer across all fields was $203.48 (Table 6) which was more than the $85.10 spent in 2007.

Table 3. Soil test results from RRVP fields and fertility recommendations.

County	Soil Test[z]				Split application rates of urea (45%)[y]	Total-N Rate	Preplant fertility N-P-K-Zn[x]
	pH	P	K	Zn			
	---(lb/acre)---						
Arkansas 1	5.8	29	170	11.9	200-100-0	156	21-53-60-0-24[w]
Arkansas 2	5.5	34	136	6.3	225-80-0	137	0-54-108-0
Ashley	5.8	58	1000	9.8	275-100-0	169	0-0-0-0
Clark	5.7	29	122	2.8	200-111-0	161	21-0-0-0-24w
Clay	7.2	55	146	13.8	225-100-0	191	45-50-90-0
Craighead	6.0	96	438	14.4	250-100-0	158	0-60-120-0
Crittenden	5.3	72	185	3.5	248-123-0	167	0-0-60-1
Drew	5.2	34	787	5.4	200-0-70	122	0-15-30-.44
Jefferson	7.0	55	606	8.0	250-0-75	185	39-46-0-.25-24[w]
Lawrence	6.1	38	210	16.0	275-0-70	155	0-40-80-.25
Lee	7.1	68	200	6.7	235-100-0	151	0-48-48-10
Lincoln	6.9	47	575	5.9	200-0-70	150	28-46-0-..23-12[w]
Lonoke 1	5.6	30	186	4.0	200-0-70	122	0-50-60-.25
Lonoke 2	6.8	73	588	5.0	250-100-0	177	19-23-0-0-12[w]
Mississippi	7.0	104	697	15.7	300-100-0	180	0-0-0-0
Poinsett	7.4	60	247	13.4	225-0-100	146	0-50-60-1.23
Pope	5.5	54	542	8.0	272-0-70	154	0-46-0-10.48
Prairie 1	6.2	59	164	12.7	230-100-0	149	0-40-90-0
Prairie 2	6.8	22	103	20.9	125-150-0	168	44-60-120-0-24[w]
Randolph	5.8	62	159	9.0	200-100-0	135	0-0-0-0
St. Francis	5.6	61	312	8.6	250-100-0	175	18-46-0-0
Woodruff	6.4	60	462	4.2	225-0-70	153	19-23-90-.23-12[w]

[z] P=phosphorus, K=potassium, and Zn=zinc
[y] preflood-midseason-boot
[x] N-P_2O_5-K_2O-Zn includes seed treatments
[w] A.S. flushed in 2-3 leaf rice

Weed Control

In 2008, the average herbicide cost was $83.14/acre (Table 6). Command was utilized in 16 of the 22 fields for early-season grass control (Table 4). Command was applied early post-emergence as a tank mix with a post-emergence herbicide in Prairie (1) County and provided season-long grass weed control. Facet was applied in four fields (Clay, Craighead, Crittenden, and Pope Counties) pre-emergence and in Lee County early post-emergence and provided excellent grass weed control. Facet was used in these fields instead of Command because of either recent land leveling or to aid in the control of hemp sesbania and/or indigo. Three fields (Jefferson, Lonoke 1 and Poinsett Counties) did not utilize an herbicide for pre-emergence weed control. Eight fields (Arkansas (2), Clark, Drew, Jefferson, Lincoln, Lawrence and Lonoke (1) Counties) were seeded in Clearfield varieties and Newpath was applied for red rice and other weeds control. The Craighead County field was the only field that did not require a post-emergence herbicide application for grass weed control, resulting in the least expensive herbicide program at $37.75/acre. Ashley County had the most expensive weed control program at $161.82/acre (Table 6).

Table 4. Herbicide rate and timings for 2008 RRVP fields.[z]

Arkansas 1	**PRE[y]:** Command (12.8 oz) **POST[x]:** Duet (3 qt), Aim (1 oz), Permit (0.25 oz)
Arkansas 2	**PRE:** Command (12.8 oz) **POST:** Propanil (2 qt) fb Newpath (4 oz) permit (0.5 oz) Aim (0.5 oz) fb Newpath (4 oz) Permit (0.5 oz)
Ashley	**PRE:** Command (25.6 oz) **POST:** Propanil (4 qt) Aim (1.0 oz) fb RiceStar (22 oz) Permit (1.0 oz) fb Clincher (15 oz) fb Blazer (10.6 oz)
Clark	**PRE:** Glyphosate (2 pt) Command (12.8 oz) **POST:** Newpath (4 oz) Aim (1.0 oz) fb Newpath (4 oz)
Clay	**PRE:** Quinstar (0.33 lb) Command (12.8 oz) **POST:** Strada (1.75 oz) Permit (0.25 oz) Propanil (2 qt)
Craighead	**PRE:** Facet (0.5 lb) Prowl (2.0 pt)
Crittenden	**PRE:** Facet (0.5 lb) Prowl (2.4 pt) **POST:** Rice Pro (3 qt) Permit (0.5 oz)
Drew	**PRE:** Glyphosate (2 pt) Permit (0.75 oz) Command (21 oz) **POST:** Newpath (4 oz) Strada (2 oz) fb Blazer (10.6 oz) Aim (0.5 oz)
Jefferson	**POST:** Newpath (4 oz) fb Newpath (4 oz) Permit (0.5 oz)
Lawrence	**PRE:** Glyphosate (2 pt) **POST:** Newpath (4 oz) fb Newpath (4 oz) Grandstand (0.67 pt) Propanil (2 qt)
Lee	**PRE:** Glyphosate (2 pt) Harmony (0.25 oz) fb Glyphosate (1 qt) Prowl (2.4 pts) **POST:** Facet (0.375 lb) Command (12.8 oz) fb Permit (0.5 oz)
Lincoln	**PRE:** Command (25.6 oz) **POST:** Newpath (4 oz) Strada (2 oz) fb Newpath (4 oz) fb Blazer (10.6 oz)
Lonoke 1	**POST:** Newpath (4 oz) fb Newpath (4 oz) fb 2,4-D (1.5 pt)
Lonoke 2	PRE: Glyphosate (1 qt) 2,4-D (1 qt) fb Glyphosate (1 qt) Command (16 oz) POST: Propanil (4 qt) Permit (0.6 oz) Grasp (2 oz)
Mississippi	**PRE:** Glyphosate (2 qt) First Shot (0.08 oz) Command (24 oz) **POST:** Propanil (4 qt) fb Clincher (15 oz) fb Blazer (0.5 pt)
Poinsett	**POST:** Newpath (4 oz) fb Newpath (4 oz) Grandstand (0.67 pt) Propanil (2 qt) fb Raptor (5 oz)
Pope	**PRE:** Glyphosate (1.5 pt) fb Command (12.8 oz) Quinstar (0.25 lb) **POST:** RiceStar (17 oz) fb Grandstand (0.67 pt) Permit (0.5 oz)
Prairie 1	**PRE:** Glyphosate (1.5 pt) **POST:** Command (12.8 oz) Propanil (3 qt) fb 2,4-D (8 oz) Aim (1 oz)
Prairie 2	**PRE:** Command (12.8 oz) **POST:** Duet (3 qts) Permit (.33 oz) (Super Wham (4 qt) Facet (.25 lb) on 20 acres)
Randolph	**PRE:** Glyphosate (1 qt) Command (8 oz)) **POST:** Duet (4 qt) Permit (0.25 oz)
St. Francis	**PRE:** Glyphosate (2 pt) Command (16 0z) **POST:** Propanil (4 qt) Permit (0.67 oz)
Woodruff	**PRE:** Command (8 oz) fb Newpath (4 oz) **POST:** Newpath (4 oz) Duet (3 qt) fb Grandstand (0.5 pt) Propanil (2 pt)

[z]All rates are on a per-acre basis
[y]PRE=preemergence
[x]POST=post emergence

Disease Control

Fungicides were applied to six of the fields in 2008 for control of sheath blight and/or blast (Table 5). The average cost for fungicide was $10.23 an acre (Table 6). Disease pressure was mild in the verification fields in 2008. Leaf blast lesions were present in the St. Francis County field. The producer was able to maintain a deep flood and damage from the disease was very minor. Kernel Smut was observed in the Prairie 1 County field. Quadris, Quilt, or Stratego were used to control sheath blight and blast and rates were determined based on variety, growth stage, climate, disease incidence/severity, and disease history (Table 5).

Insect Control

The Lee County field required treatment for rice water weevil (Table 5). Ten fields (Clark, Craighead, Lee, Lincoln, Lonoke (1), Pope, Prairie (2), Randolph and Woodruff Counties) were treated for rice stink bug. The Craighead County field required two applications of insecticide for control. Rice stink bug levels were well above treatment threshold in the first fields to head. The numbers diminished later in the season. The average cost for insecticides was $7.48/acre compared to $0.62/acre in 2007 (Table 6).

Table 5. Fungicide and insecticides applications in 2008 RRVP fields

County	Sheath Blight	Blast	Rice Water Weevil	Rice Stink Bug
Arkansas 1	-----	------	------	------
Arkansas 2	Quadris (12.5 oz)	------	------	------
Ashley	------	-----	------	------
Clark	Stratego (16 oz)	------	------	Karate (1.8 oz)
Clay	Quadris (6.5 oz)	------	------	------
Craighead	------	------	------	Karate (3.6 oz)
Crittenden	-----	------	------	------
Drew	------	------	------	------
Jefferson	------	------	------	------
Lawrence	------	------	------	------
Lee	Stratego (19 oz)	------	Karate (1.8 oz)	Karate (1.8 oz)
Lincoln	------	------	------	Mustang Max (3.2 oz)
Lonoke 1	-----	-----	-----	Karate (1.6 oz)
Lonoke 2	Stratego (16 oz)	-----	-----	-----
Mississippi	-----	-----	-----	-----
Poinsett	-----	-----	-----	-----
Pope	-----	-----	-----	Karate (1.6 oz)
Prairie 1	-----	-----	-----	Mustang Max (3.2)
Prairie 2	Quilt (14 oz) Quadris (7 oz)	-----	-----	Karate (1.6 oz)
Randolph	-----	-----	-----	Karate (1.6 oz)
St. Francis	-----	-----	-----	-----
Woodruff	-----	-----	-----	Mustang Max (2.6 oz)

Economic Analysis

This section provides information on the development of estimated production costs for the 2008 RRVP. Records of operations on each field provided the basis for estimating these costs. The field records were compiled by participating county Extension faculty, the coordinator of the RRVP, and the producers for each field. Presented in this analysis are specified variable costs, specified ownership costs and total costs for each of the fields. Break-even prices for the various cost components and returns above specified variable expenses at the average 2008 harvest price and adjusted for milling yield are also presented.

Specified variable costs are those expenditures that would generally require annual cash outlays and would be included on an annual operating loan application (Table 6). Actual quantities of all operating inputs were used in this analysis along with input prices collected for use in the Arkansas Cooperative Extension Service 2008 Rice Budgets with updated urea, potash, phosphate, and diesel prices to match spring 2008 input prices.

The producers' actual field operations were used as a basis for calculations and actual equipment sizes and types were matched as closely as possible. Fuel and repair costs were calculated by Extension models based on the size or horsepower of the equipment. A diesel price of $4.25 per gallon was used for 2008 ($2.22 was used for 2007). Therefore, the producers' actual machinery costs may vary from the machinery cost estimates that are presented in this report. Specified variable costs for the 2008 RRVP fields averaged $231/ac more than the 2007 average and ranged from $579/ac for Mississippi County to $818/ac for Woodruff County, with an overall acre weighted average of $673/ac (Table 7).

Land costs incurred by producers participating in the RRVP would likely vary from land ownership, cash rent, or some form of crop share arrangement. Therefore, a comparison of these divergent cost structures would contribute little to this analysis. For this reason, a 20% crop share rent was assumed to provide a consistent standard for comparison. This is not meant to imply that this arrangement is normal or that it should be used in place of existing arrangements. It is simply a consistent measure to be used across all RRVP fields. The average break-even price needed to cover specified variable costs including the assumed 20% crop share rent was $4.89/bu, which is $2.17/bu more than the $2.71 price required in 2007. Furthermore, break-even prices to cover variable costs ranged from $3.76/bu in Craighead County up to $6.76/bu in Arkansas (2) County (Table 7).

Table 7 includes estimated net returns above specified variable costs and total costs. Net land costs and impacts of milling yields on gross returns are also included. Estimated landowner returns or net land costs were calculated assuming the landowner pays 20% of the drying expenses and all irrigation system fixed costs at $25.22/ac for a typical well or $24.69/ac for a re-lift system. Arkansas (1), Lonoke (2), Pope, and Prairie (2) Counties used a re-lift irrigation system. Costs for risk, overhead, and management were not included.

Crop price was estimated based on a harvest season average price of $7.50/bu, which was a reported total November futures price average minus an estimated basis of $0.90/bu under for the period of September 1, 2008 – October 10, 2008. A premium or discount was given to each farm based upon the milling yield. A standard milling of 55/70 would generate $7.50/bu. Broken rice is assumed to have 70% of whole price value. If milling yield is higher than the standard, a premium is made while a discount will be given for milling less than standard. The 2008 average premium per acre was less than the 2007 premium by $14.15/acre. Estimated prices adjusted for milling yield varied from $6.71/bu in Ashley County to $7.89/bu in Prairie (1) County, with an average of $7.51/bu.

Returns above variable costs ranged from $84/ac in Arkansas (2) County to $687/ac profit in Craighead County. Rice harvest price helped offset the increase in production costs and the decrease in yields when compared to last year. Irrigation costs and land topography were two main factors that increased profitability. The top five fields with the highest returns above variable cost were Craighead, Lonoke (2), Arkansas (1), Pope, and Randolph. Out of the five fields, three were zero grade, one straight levee, and one contour levee. Three of these five fields also had surface irrigation. Figure 2 gives a visual representation of all fields in the 2008 RRVP from highest yield to lowest and presents returns above variable costs with an 80/20 share crop rental arrangement.

Table 6. Selected variable inputs costs from the 2008 RRVP fields.[z]

County	*Variety*	*Seed*[y]	*Fertilizer*[x]	*Herbicides*[x]	*Fungicides*[x]	*Insecticides*[x]	*Fuel*[w]	*Irrigation*[v]
Arkansas (1)	Francis	48.69	215.94	47.52	0.00	0.00	44.09	71.24
Arkansas (2)	CL171	74.47	243.75	105.32	31.63	0.00	41.88	125.27
Ashley	Cocodrie	22.05	137.81	161.82	0.00	0.00	25.90	124.52
Clark	CL171	41.87	150.03	83.19	24.46	11.71	35.42	124.52
Clay	Francis	19.74	259.41	50.10	19.69	11.16	36.22	114.12
Craighead	Wells	56.63	252.97	37.75	0.00	23.42	19.67	108.84
Crittenden	Wells	27.09	205.95	91.30	0.00	0.00	34.57	114.12
Drew	CLXL729 Blend	99.14	164.11	121.33	0.00	0.00	34.33	114.12
Jefferson	CLXL730	104.03	199.41	52.22	0.00	0.00	15.04	99.77
Lawrence	C XL729	112.00	316.41	59.12	0.00	0.00	21.70	99.77
Lee	Francis	27.09	181.31	118.85	27.78	29.31	41.89	114.87
Lincoln	CLXL729 Blend	113.68	166.00	102.66	0.00	11.16	34.33	86.91
Lonoke (1)	CLXL730	107.00	183.26	55.28	0.00	11.16	41.38	141.14
Lonoke (2)	Francis	47.40	167.10	117.05	24.46	0.00	19.24	60.25
Mississippi	Wells	24.15	147.00	114.79	0.00	0.00	44.03	114.87
Poinsett	CLXL729	109.53	244.80	84.79	0.00	0.00	25.68	74.67
Pope	XL723	150.80	192.71	79.87	0.00	0.00	33.77	40.29
Prairie (1)	Cybonnet	33.86	212.72	56.92	0.00	12.06	43.99	135.28
Prairie (2)	Cocodrie	21.84	266.10	55.01	33.34	4.41	44.72	70.49
Randolph	XL723	98.80	170.75	54.32	0.00	11.16	28.87	139.07
St. Francis	Wells	51.06	181.18	69.50	0.00	0.00	25.71	156.90
Woodruff	XL729	113.41	196.61	96.79	0.00	11.18	49.34	163.84
Weighted Average 2008[s]		65.83	203.48	83.14	10.23	7.48	35.34	108.78
Weighted Average 2007[u]		48.20	85.10	58.38	8.45	0.62	19.96	69.72
Change[t]		17.63	118.38	24.75	1.79	6.85	15.38	39.07

[z] Does not include all variable costs such as drying, hauling, equipment repair, etc.

[y] Includes seed cost and treatments.

[x] Includes material and application cost for each input.

[w] Fuel for tractors, combines, and self-propelled equipment ($4.25/gal).

[v] Includes irrigation labor, irrigation supplies (levee gates and poly-pipe), irrigation repair and maintenance, and diesel fuel ($4.25/gal).

[u] Average costs from the 2007 RRVP fields using 2007 costs of production.

[t] Change in average costs from 2006 to 2007.

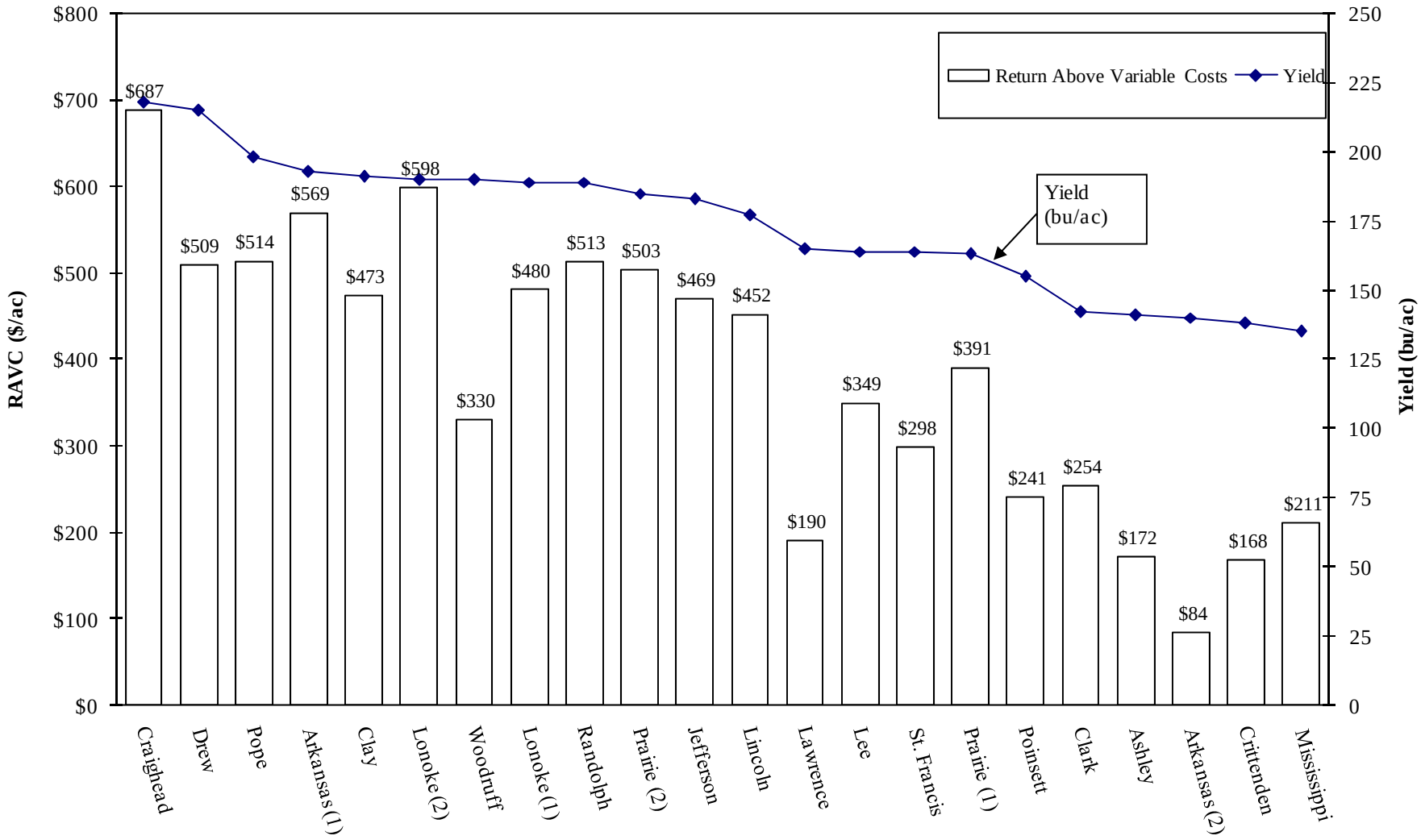
[s] Weighted by acres.

Table 7. Economic summary of the 2008 RRVP fields.

County	*Yield*	*Milling Yield*	*Crop Price*[y]	*Specified Variable Costs*[x]	*Specified Ownership Costs*[w]	*Land Costs*[v]	*Return Above Variable Costs*	*Return Above Total Costs*	*BEP*[u] *to Equal Variable Costs*	*BEP to Equal Total Costs*	*Milling Yield Premium or Discount*[t]
	bu/ac		*$/bu*	*----------($/ac)----------*					*----------($/bu)----------*		$/ac
Arkansas (1)	193	59/68	7.48	602	60	247	569	509	3.79	4.20	-4.42
Arkansas (2)	140	60/68	7.51	771	55	171	84	30	6.76	7.28	1.61
Ashley	141	53/61	6.71	599	37	150	172	135	5.19	5.55	-111.40
Clark	142	55/69	7.42	603	46	172	254	208	5.18	5.63	-11.38
Clay	191	60/68	7.51	693	50	244	473	423	4.42	4.77	2.19
Craighead	218	61/70	7.71	676	31	291	687	657	3.76	3.96	44.93
Crittenden	138	47/66	6.90	609	47	152	168	121	5.39	5.85	-82.17
Drew	215	50/66	7.01	716	45	257	509	463	4.05	4.34	-105.86
Jefferson	183	52/69	7.32	619	24	226	469	445	4.11	4.30	-33.52
Lawrence	165	52/66	7.08	759	32	193	190	158	5.63	5.91	-69.90
Lee	164	63/71	7.85	697	54	217	349	295	5.19	5.64	58.22
Lincoln	177	63/71	7.85	676	45	237	452	406	4.66	5.01	62.83
Lonoke (1)	189	61/71	7.79	715	55	251	480	426	4.61	5.00	54.11
Lonoke (2)	190	61/70	7.71	590	31	252	598	567	3.77	3.99	39.16
Mississippi	135	53/67	7.19	579	55	155	211	156	5.24	5.78	-41.73
Poinsett	155	53/69	7.35	684	39	189	241	202	5.41	5.74	-23.07
Pope	198	51/70	7.36	668	50	251	514	464	4.12	4.45	-27.20
Prairie (1)	163	64/71	7.89	655	56	216	391	334	4.89	5.36	63.46
Prairie (2)	185	63/70	7.77	664	55	246	503	448	4.37	4.77	50.84
Randolph	189	60/71	7.75	678	43	250	513	470	4.36	4.68	47.61
St. Francis	164	47/66	6.90	625	36	184	298	262	4.63	4.95	-97.65
Woodruff	190	55/69	7.42	818	62	238	330	268	5.25	5.69	-15.23
Weighted Average 2008	171	57/69	7.51	673	48	216	371	323	4.89	5.27	3.60
Weighted Average 2007	191	58/72	4.66	442	52	161	304	252	2.71	3.07	17.74
Change[s]	-20	---	2.85	231	-5	55	67	72	2.17	2.21	-14.15

[y] Based upon premium or discount above $7.50/bu with a standard milling of 55/70.
[x] Includes all variable expenses for production, drying, hauling, check-off fee, interest, etc.
[w] Excludes ownership expenses of irrigation well, which are assumed to be paid by the landlord.
[v] Gross value of landlords 20% share of crop less drying charges check-off fee, and irrigation fixed expenses.
[u] BEP = break even price
[t] Impact of milling on gross returns. (Gross returns at milling yields minus gross returns at standard milling yield, i.e. 55/70)
[s] Change in averages from 2007 to 2008.

Figure 2. Yield and returns above variable costs for the 2008 RRVP fields.



DISCUSSION

Field Summaries

As you read the contents of this report, you will notice some extremely good yields, some exceeding 200 bu/acre. Success has to be measured on a field-by-field basis. Many of the producers experienced a yield increase of 10, 20 or more bushels per acre over the fields' historic yield. The following is a summary of all the fields in the 2008 Rice Research Verification Program (RRVP).

Northern Fields – Stewart Runsick

Clay

Clay County was a 120-acre field of Francis. In 2007, half of the field was planted in corn, the other half was soybeans. The field was seeded with 85 lbs. of seed per acre on 30 April. Command and Facet were applied pre-emerge and provided excellent grass weed control.

You may notice the total nitrogen applied to this field was 191 lbs/acre which is more than is normally recommended. The producer has been applying 100 lbs. of urea per acre at the 2-3 leaf stage ahead of a rain or a flush and feels like this helps to increase yield. There are benefits to applying nitrogen at this stage; however, in research, a yield response is not observed. I asked the producer to split the field and apply urea to half and leave the other half untreated. When the application was made, the entire field was fertilized by mistake. The field made a respectable 191 bu/acre and I would argue that the same yield would have been achieved without the early nitrogen application.

Craighead

The Craighead County field was the second field planted on 7 April and was the highest yielding field in the program with 218 bu/acre. The field was broadcast seeded with Wells, with a plane, at a rate of 150 lbs. seed per acre. The field came up to a very uniform stand with 28 plants/ft^2 on 20 April. The stand was much more uniform than the field seeded last year with a truck. This field was ahead of the DD50 all season due to excellent growing conditions and above normal temperatures early. This field was recently leveled to zero grade and this was its first rice crop.

Facet and Prowl were applied pre-emerge and provided excellent grass weed control. No additional herbicides were needed. The field was the first rice field to head in this area and reached treatment threshold for rice stink bug early. After treatment, the stink bug level exceeded the threshold again, so another application of insecticide was applied. This field was also the most profitable in the program as the expenses were low.

Crittenden

This was one of the lowest yielding fields in the program this year. The field has been recently leveled. Part of this field was sandy and had been in cotton production in

past years. Sulfur deficiency symptoms were present in this area of the field. The other part was a clay soil type and produced the better rice. The cut and fill areas were easily distinguishable as the crop progressed. The seeding rate was too high in this field, and I think every seed came up. The stand was 35 plants/f^2. Facet injury was observed in some areas, but was not severe. The hurricanes caused considerable loss from shattering and lodging.

Ammonium sulfate was applied twice at a rate of 50 lbs/acre blended with the pre-flood and mid-season urea. Potassium and zinc fertilizer were applied according to the soil test recommendations. The producer did an excellent job of managing the flood. The field was clean, free of weeds and disease. Before harvest, I predicted the yield to be at least average or around 150 bu/acre. I look forward to trying again next year of this field. With a little luck, it should be much better. The first crop after a field is leveled is usually the worst.

Lawrence

This field stayed wet and was planted late. The field is zero grade, clay soil, and was in rice last year. It was finally planted, still wet, on 12 May. The drill rows did not close well and it took a long time to get a stand. The final stand count was 5 plants/ft^2. There were several holes and thin spots in the field, but by the end of the season it filled in fairly well. It was too late to consider re-planting.

The field was seeded in CL XL 729 at 30 lbs/acre. Two applications of Newpath were applied. The second application had Grandstand and Propanil for control of indigo. A few weeds came up late in the thin spots where no rice was in competition, but really did not amount to much. The field yielded 165 bu/acre. This field will be in the program again next year. It has much better yield potential and, weather allowing, should be much better next year.

Lonoke (1)

I am not sure, but I would guess that this year's 189 bu/acre was the highest yield ever made on this farm. The field was seeded in CL XL 730, which was the major contributing factor to the increased yield. Everything went just as planned with no problems. It was a little dry when the first Newpath application was applied. The larger broadleaf signalgrass was stunted, but did not die. The second application finished it off. The field was sprayed for rice stink bugs.

Mississippi

The Mississippi County field was the last field planted on 22 May. This alone was a major factor for the decreased yield. The other was the pre-flood urea mess-up. In this area, farmers usually wait to pull the levees until just prior to flood so that all the herbicide and fertilizer applications can be made by ground. This year, it rained 1.5 inches after the urea was applied, before the levees were constructed. It took over 2 weeks to get the permanent flood established, resulting in a loss of nitrogen. The delayed flood also caused another herbicide application.

First Shot was added to the Glyphosate burndown for control of smartweed and provided excellent control. Propanil was applied with the urea application mainly for

broadleaf weeds and some small barnyardgrass. Clincher was applied post-flood to control the next flush of barnyardgrass. Blazer was applied mid-season for hemp sesbania control.

The field never really turned yellow, but the rice was visibly thin and stunted. The mid-season application of urea was applied early (at green ring).

Poinsett

This field was leveled last fall. It stayed flooded all spring and was finally planted on 18 May. Early in the season the field stayed clean except for indigo. Grandstand and Propanil were added to the Newpath for control. Red rice was present following the second application of Newpath. The red rice appeared to be stunted, but did not die. Amazon sprangletop was also scattered across the field. Raptor was applied post-flood because beyond was not available. The red rice escaped this application as well. The plants were tested for resistance, and the results indicated they were resistant to Newpath. Part of the field was rouged; however, red rice was present at harvest.

Pope

This year's Pope County verification field was in the same field as last year with the same variety. The main difference was the field was planted a month later than last year and had to be replanted due to a poor stand. The zero grade clay field stayed wet. This area of the state received more than 28 inches or rainfall during the season. I think it rained four inches about every week. The weather made things difficult this year, to say the least.

Command and Facet were applied pre-emerge. Command was added for sprangletop. The pre-emerge herbicide broke down before the permanent flood was established. The flood was delayed waiting on the field to dry out enough to apply the urea. RiceStar was used for grass control, followed by Grandstand and Permit for control of hemp sesbania and nut sedge. The field also had some red rice.

Despite all the weather problems, the field still made a respectable 198 bu/acre.

Prairie (1)

The post-emergence application of Propanil and Command worked well again this year in Prairie County. 2, 4-D with Aim was applied to the entire field mid-season for control of cutleaf ground cherry on the levees. Nothing out of the ordinary occurred here and everything went as planned. No fungicide was needed even though Cybonnet is usually very susceptible to sheath blight. I think proper fertilizer applications go a long way to prevent the disease.

The yield was 163 bu/acre, which is good for this variety. Cybonnet was chosen here because of its blast resistance and excellent milling quality. This was the best milling variety in the program this year and added $63.00/acre premium.

Randolph

Streaking from the pre-flood nitrogen application in this field resulted in at least 10 bu/acre yield decrease. An equipment problem with the spreader truck resulted in a

poor distribution of the urea. Once the problem was noticed, an additional 100 lb/urea was applied post-flood. It is impossible to make up the difference once the field has been flooded, but there was not much of an option.

Duet and Permit were used for post-emergence weed control. The field was very clean following the command application. The main weed problem was yellow nutsedge with some scattered broadleaf signalgrass. The field did reach treatment level for rice stink bug and was treated with an insecticide. The yield was still very good: 189 bu/acre.

St. Francis

The St. Francis County field also stayed wet all spring and was planted late. This field is the same zero grade field as last year. Wells was broadcast seeded with a plane on 6 May. The rice came up to a good stand with 23 plants/ft^2. Glyphosate and Command were applied early, followed by Propanil and Permit just prior to flood.

Some leaf blast was present. A deep flood was maintained, and very little damage from the disease occurred. No fungicide was applied, as the field never reached treatment level for sheath blight. The field yielded 164 bu/acre. Some lodging did occur from wind, but was not severe. Late planting and environmental conditions were the main reasons for the decrease in yield from last year.

Woodruff

Woodruff County was seeded with CL XL 729. It was planted early and harvested before the hurricanes. It made an excellent yield. Everything went as planned in this field. Two applications of Newpath were applied. Duet was added to aid in control of broadleaf weeds. This field also had to be treated for stink bugs.

Southern Fields – Ralph Mazzanti

Arkansas County (1 Stuttgart)

The Stuttgart field was 78-acre silt loam planted 15 April with 80 lbs. Francis. This was the second verification field planted. Seed treatments were Dermacor, Trilex, Release, and Allegiance. Needless to say, even in cool temperatures this field grew off quickly, vigorously, and to a uniform stand. The stand count was 28 plants sq/ft. Major weed problems included sprangletop, signalgrass, eclipta and nutgrass. With Command out early, then followed by three quarts Duet, 1 oz. Aim, and .25 oz. Permit it seemed to do a good job cleaning up the field. Due to plane application issues there were some ground cherries that escaped on levees around the edge of the field and close to power lines. Red rice was scattered across the field. Sheath blight showed up late, but never reached treatment level. The field cut an impressive 193 bu/acre.

Arkansas County (2 DeWitt)

It's always disheartening to see a field look so good yet not turn out. A 140-acre silty clay loam field was planted with 90 lbs. CL 171. One and a half tons of litter was applied late. Three hundred pounds of 0-18-36 were applied according to soil sample recommendations, though we did not count the litter contents. The seed had Dermacor as

a seed treatment, and a 30-foot row space through field was used as an untreated check. The field had a history of grape colaspis. This field was planted on 5 May at a rate of 90 lbs. per acre. The field grew off exceptionally well with great vigor and was uniform. Herbicides Command and Rice Shot did a good job early, but we had a persistent problem with dayflower. The two applications of Newpath and Permit two weeks apart cleaned the field up.

Blazer was applied for coffee beans. Pre-flood urea was applied at 225 lbs. followed by 80 lbs. mid-season. The field looked absolutely great, was thick and then sheath blight started in rapidly. Quadris was applied at 12.5 oz. The 30-foot untreated check of Dermacor showed no difference in the treated field. The field cut a disappointing 140 bu/acre, and I contribute it to late planting and the variety CL 171.

Ashley

The Ashley County field was a 50-acre heavy clay field located in Overflow National Wildlife Refuge. Cocodrie was variety of choice at a planting rate of 105 lbs. The plant population was 22 plants per square foot. The levees were late getting in and there was a challenge for grass control. Command was applied, followed by Propanil and Aim. Barnyardgrass persisted, so RiceStar at 22 oz. was applied.

After the levees were in, we continued to have watering concerns and grass kept coming. Clincher was applied at 15 oz. and control was limited. Barnyardgrass and nut grass were prevalent, and Hurricanes Gustav and Ike caused considerable lodging in the field. The field cut 141 bu/ acre.

Clark

The Clark County field was a 52-acre silty clay loam field drilled 5 June with CL 171 AR at 70 lbs. per acre. There was a thin stand around the South edge and West side of the field. The variety and planting date, along with the thin stand, was a concern all year. Roundup and Command did a good job early cleaning up weeds and grasses, following two sequential applications of Newpath. Stratego and Karate were applied for sheath blight and stink bugs. The field cut a disappointing 142 bu/acre that was contributed to variety and late planting.

Drew

The Drew County Field consisted of a 42-acre silty clay loam field planted in CL XL 729 at a rate of 53 lbs. on 13 April. This field had a few weed challenges early because of some large grasses and broadleaves. Roundup, Command and Permit were applied after planting to clean up the field. Newpath and Strata were applied at 3 to 5 leaf stage for barnyardgrass and coffeebeans. Aim and Blazer were applied for broadleaves on levees and escaped coffeebeans. The second applications of Newpath and Beyond were not available, and at the time of availability we were past a half inch internode elongation.

The field had no red rice or history of red rice, so we did not chance a late application. Fertilizer was applied according to recommendations at 100 lbs. 0-15-30, followed up with 200 lbs. urea at pre-flood, followed by 70 lbs. urea at boot. This field looked good all year. Pumping was relatively low with rainfall amounts at 18 inches. All

but maybe two acres of the field was harvested prior to the hurricanes. This was one of the reasons it was the highest yielding field in the South Arkansas Rice Research Verification program. The field dried 215 bu/acre.

Jefferson

Frequent spring rains and flooding ensured this zero grade 59-acre field never dried up. The field was water seeded on 24 April with 30 lbs. XL CL 730 flown into the flood, allowing two weeks for germination and peg down. Afterwards it was treated like a drilled seeded field. The first application of Newpath went out and the field turned completely brown. Seed counts went from 7-9 seeds sq/ft to 5-6. We had an issue with rice water weevils, so the field was dried. Ammonia sulfate was flown in at 100 lbs. and flushed, and we started to see green up. The field looked good from then on, except there were a few thin spots.

The second application of Newpath and Permit did a good job cleaning up the field. Herbicide cost for the field was $36 an acre. There was increased pumping due to only four inches of rainfall for the season. All of the fertilizer was put out according to soil test recommendations. Hurricanes Gustav and Ike came in just before harvest, and delayed it about a week. There were five bushels on the ground before the combine went through and 12 bushels on ground afterwards. The field harvested a respectable 183 bu/acre, and turned out to be the best yielding hybrid field on the 1,700-acre farm with the least expense.

Lee

The first fields were planted 27 March with 120 lbs. Francis. The Lee County field consisted of 135 acres of silty clay loam soil that had deep cuts from leveling through the middle section. Top Choice (pelletized litter) was applied to cut areas. This field had a history of grape colaspis and water weevils. Mustang Max was applied behind the planter, while Karate was used later in the season for water weevils. This field was stacked with hills and levees, but seemed to water O.K.

Roundup and Prowl held off weeds early, followed by a Facet and Command tank mix, which did a good job holding down grasses until the permanent flood. Permit was applied for nut grass control. Our fertility program consisted of 200 lbs. of 0-24-24 plus 10 lbs. zinc, followed by 235 lbs. urea plus Agrotain at pre-flood, and 100 lbs. urea at mid-season. Even though a high rate of seed was planted, there were thin spots all through the field—mainly due to cuts. Stratego and Karate were applied for sheath blight and stink bug control. The yield was a disappointing 164 bu/acre.

Lincoln

The Lincoln County field was 140 acres of heavy clay drilled on 22 April with 60 lbs. CL XL 729 Blend. The field emerged well, and Command seemed to be holding grasses well. The Newpath and Strada went out about seven days late, as we were waiting on the wind to die down. The tank mix did a good job cleaning up grasses, Northern joint vetch, and coffee beans. Later an application of Blazer went out for late coffee beans. Mustang Max was applied for stink bugs. The fertilizer program consisted of 100 lbs. DAP plus 50 lbs. ammonium sulfate flushed in early, followed by 200 lbs.

urea applied pre-flood and 70 lbs. urea at boot stage. The field looked great all year and cut 177 bu/acre, a little less than expected—yet in a hurricane year we'll take it.

Lonoke (2)

The Lonoke County field was in its second year in the program and consisted of a 20-acre zero grade clay field. Francis was the variety of choice drilled at 100 lbs. per acre. Stand counts were 26 plants per square foot. Roundup and Command were applied early for burn down and pre-emergence grass control.

The rice struggled to grow off because of cool nighttime temperatures, so 50 lbs. of ammonium sulfate and 50 lbs. of Dap were applied. A pre-flood rate of 250 lbs. of urea was applied, followed by 100 lbs. at mid-season. A post application of Rice Shot, Grasp, and Permit were applied, cleaning up the field. Stratego was applied for sheath blight control. The field cut a respectable 190 bu/acre, compared to the previous year of 167 bu/acre of CL XL 730.

Prairie (2)

The Prairie County field consisted of an 86-acre silty loam field planted 4 April with 95 lbs. Cocodrie. Stand counts were 26 plants per square foot. The field grew off well until grape colaspis started to slow progression and thin down areas. Fifty pounds of ammonium sulfate and 50 lbs. urea seemed to kick it off. Duet and Permit were applied and did a good job on grasses and broadleaves.

Super Wham and Facet were sprayed on the West side of the field on 20 acres where we had some grass escapes. Red rice came on strong in spots, and was scattered throughout the field. A Quilt and Quadris tank mix was applied for sheath blight, and Karate was in the mix for stink bugs. This field cut an impressive 185 bu/acre with no more than .25 of a bushel left behind the combines.

On Farm Research

Research was conducted in four of the verification fields in 2008. Disease monitoring tests were planted in Lincoln, Pope, and Randolph Counties. A Dermacor seed treatment test for control of grape colaspis was established in Arkansas (2) County. The field has a history of grape colaspis; however, no damage was observed this year in either the treated or untreated areas of the field.

Summary

The 2008 Rice Research Verification Program was conducted on 22 commercial rice fields across the state. Grain yield in the 2008 RRVP averaged 171 bu/acre with a range of 138 to 218 bu/acre. The 2008 RRVP average yield was 21 bu/acre greater than the estimated Arkansas state average yield of 150 bu/acre. The highest yielding fields were in Craighead, Drew, Pope, and Arkansas (1) Counties with grain yields of 218, 215, 198 and 193 bu/acre. The lowest yielding fields were in Mississippi and Crittenden Counties with grain yields of 135 and 138 bu/acre. Milling quality in the RRVP was comparable with milling from the Arkansas Rice Performance Trials and averaged 57/69.